

What is claimed is:

1 1. A detectable flat panel display, comprising:
2 a substrate including a circuit region and a display
3 region;
4 a circuit device disposed on the circuit region of
5 the substrate;
6 a display device disposed in the display region of
7 the substrate; and
8 a metal pattern formed in the circuit region, capable
9 of reflecting light such that the reflected
10 light is detectable by recognition equipment.

1 2. The detectable flat panel display as claimed in
2 claim 1, wherein the circuit device is a thin film
3 transistor.

1 3. The detectable flat panel display as claimed in
2 claim 2, wherein the display device is an organic
3 light-emitting diode.

1 4. The detectable flat panel display as claimed in
2 claim 3, comprising:
3 a substrate including a thin film transistor (TFT)
4 region and an organic light-emitting diode
5 (OLED) region;
6 a thin film transistor disposed in the TFT region of
7 the substrate, wherein the thin film transistor
8 has a metal electrode as the metal pattern;
9 a planarizing insulating layer covering the thin
10 film transistor, wherein the planarizing

11 insulating layer has a contact window to expose
12 the metal pattern;
13 a transparent anode disposed in the OLED region of
14 the substrate and electrically connected to the
15 metal pattern;
16 a transparent insulating cover layer covering a
17 portion of the anode in a contact window
18 position;
19 an organic light-emitting layer disposed on the
20 anode and the insulating cover layer; and
21 a transparent cathode disposed on the organic
22 light-emitting layer.

1 5. The detectable flat panel display as claimed in
2 claim 4, wherein the metal pattern is a source electrode
3 or a drain electrode.

1 6. The detectable flat panel display as claimed in
2 claim 4, wherein the metal pattern is a gate.

1 7. The detectable flat panel display as claimed in
2 claim 4, wherein the planarizing insulating layer is a
3 photoresist material or a dielectric material.

1 8. The detectable flat panel display as claimed in
2 claim 7, wherein the planarizing insulating layer is
3 formed by spin coating.

1 9. The detectable flat panel display as claimed in
2 claim 1, wherein any layer above the metal pattern is
3 transparent.

1 10. The detectable flat panel display as claimed in
2 claim 1, wherein the metal pattern is the outermost layer.

1 11. A detectable flat panel display, comprising:
2 a substrate including a circuit region and a display
3 region;
4 a circuit device disposed in the circuit region of
5 the substrate;
6 a display device disposed in the display region of
7 the substrate; and
8 a metal pattern formed in the display region, capable
9 of reflecting light such that the reflected
10 light is detectable by recognition equipment.

1 12. The detectable flat panel display as claimed in
2 claim 11, wherein the display device is an organic
3 light-emitting diode.

1 13. The detectable flat panel display as claimed in
2 claim 12, wherein the organic light-emitting diode
3 includes:
4 an anode;
5 an organic light-emitting layer disposed on the
6 anode;
7 a transparent cathode disposed on the light-emitting
8 layer,
9 wherein at least one of the organic light-emitting
10 layer and the transparent cathode has an
11 opening, and the metal pattern is disposed in
12 the opening.

13 14. The detectable flat panel display as claimed in
14 claim 13, comprising:

15 a substrate including a thin film transistor (TFT)
16 region and an organic light-emitting diode
17 (OLED) region;

18 a thin film transistor disposed in the TFT region of
19 the substrate, wherein the thin film transistor
20 has a gate, a source electrode, and a drain
21 electrode;

22 a planarizing insulating layer covering the thin
23 film transistor, wherein the planarizing
24 insulating layer has a contact window to expose
25 the gate, the source electrode, and the drain
26 electrode;

27 an anode disposed in the OLED region of the substrate
28 and electrically connected to the gate, the
29 source electrode, and the drain electrode;

30 an insulating cover layer covering a portion of the
31 anode in a contact window position;

32 an organic light-emitting layer disposed on the
33 anode and the insulating cover layer; and

34 a transparent cathode disposed on the organic
35 light-emitting layer.

1 15. The detectable flat panel display as claimed in
2 claim 11, wherein any layer above the metal pattern is
3 transparent.

1 16. The detectable flat panel display as claimed in
2 claim 11, wherein the metal pattern is the outermost
3 layer.

1 17. A detectable organic light-emitting diode
2 display, comprising:
3 a substrate including a thin film transistor (TFT)
4 region and an organic light-emitting diode
5 (OLED) region;
6 a thin film transistor disposed in the TFT region of
7 the substrate, wherein the thin film transistor
8 has a first metal pattern capable of reflecting
9 light such that the reflected light is
10 detectable by recognition equipment;
11 a planarizing insulating layer covering the thin
12 film transistor, wherein the planarizing
13 insulating layer has a contact window to expose
14 the first metal pattern;
15 a transparent anode disposed in the OLED region of
16 the substrate and electrically connected to the
17 first metal pattern;
18 a transparent insulating cover layer covering a
19 portion of the anode in a contact window
20 position;
21 an organic light-emitting layer disposed on the
22 anode and the insulating cover layer; and
23 a transparent cathode disposed on the organic
24 light-emitting layer.

1 18. A detectable organic light-emitting diode
2 display, comprising:
3 a substrate including a thin film transistor (TFT)
4 region and an organic light-emitting diode
5 (OLED) region;

6 a thin film transistor disposed in the TFT region of
7 the substrate;
8 an anode disposed in the OLED region of the
9 substrate;
10 an organic light-emitting diode disposed on the
11 anode; and
12 a transparent cathode disposed on the organic
13 light-emitting layer,
14 wherein at least one of the organic light-emitting
15 layer and the transparent cathode has an
16 opening, and a second metal pattern is disposed
17 in the opening, capable of reflecting light
18 such that the reflected light is detectable by
19 recognition equipment.

1 19. A recognition system, comprising:
2 a detectable flat panel display; and
3 recognition equipment,
4 wherein the detectable flat panel display includes:
5 a substrate including a circuit region and a
6 display region;
7 a circuit device disposed in the circuit region
8 of the substrate; and
9 a display device disposed in the display region
10 of the substrate,
11 wherein the detectable flat panel display meets at
12 least one of the following requirements:
13 a first metal pattern is disposed in the circuit
14 region, wherein any layer above the first
15 metal pattern is transparent or the first

16 metal pattern is the outermost layer, such
17 that the first metal pattern is detectable
18 by the recognition equipment; or
19 a second metal pattern is disposed in the
20 display region, wherein any layer above
21 the second metal pattern is transparent or
22 the second metal pattern is the outermost
23 layer, such that the second metal pattern
24 is detectable by the recognition
25 equipment.

1 20. The recognition system as claimed in claim 19,
2 wherein the recognition equipment includes a light
3 source, a receiver, and a signal feedback device, wherein
4 when light from the light source irradiates the flat panel
5 display, the light is reflected by the first and/or second
6 metal pattern, the receiver receives a signal of the
7 reflected light and transmits the signal to the signal
8 feedback device, and the signal feedback device transmits
9 the signal back to the flat panel display.